



Design of a TPF Nuller Using Conductive Waveguide Integrated Optics

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Conductive waveguide technology presents a viable and interesting alternative to bulk optics in the construction of an interferometric nuller for the TPF mission. The current state of the art in laser micromachining technology will soon make it possible to manufacture integrated optics (IO) devices which will function at far- and mid-infrared wavelengths. Integrated optics have the advantage of reduced weight and extremely small packaging, as well as high reliability and redundancy in the context of spacecraft flight requirements. We present results in the simulation and manufacture of scaled conductive IO devices which may be used to implement various architectures for a TPF nuller, including an implementation of an integrated dual Bracewell configuration which we call the Triple-Tee Stack. We show that alternative TPF architectures may also be implemented in this technology at substantial savings in weight and parts count.